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The potential for coordinated logistics planning at the local level: A Norwegian in-depth study of public and private stakeholders

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ABSTRACT

Transport is strongly linked to cities and affected by planning related to their future. Trends such as population growth and aging, liveable cities, infrastructure resilience, and changes in land use patterns are reshaping how people and goods move across urban areas. In Norway, local authorities are primarily responsible for facilitating these trends by incorporating related issues into their planning processes. In contrast to personal travel, freight transport and logistics have been neglected by local authorities in urban planning. Thus, in order to address freight transport in decision-making processes, local authorities need to have an increased understanding of urban freight and to pay more attention to freight transport and city logistics. The aim of the paper is to understand the potential for coordinated logistics planning at the local level. Interviews were held with representatives of public authorities and private stakeholders within the logistics supply chain in three Norwegian cities. It is necessary for local authorities to understand stakeholders' operations, perspectives, and attitudes in order to ensure that their involvement in urban planning will be constructive. The findings show that there are no overall strategies for urban freight or city logistics in the studied cities, although public authorities are concerned with issues related to urbanisation and sustainability that indirectly affect freight deliveries. Furthermore, there is poor capacity in planning and policymaking regarding freight. Local authorities comprise a number of fragmented departments and appear to lack resources dedicated to urban freight. However, such authorities realise the need for their contribution in the process of establishing urban logistics plans.

1. Introduction

Growing demands for transportation are a challenge in terms of both logistical performance and the associated impacts on the environment. While passenger transport has received considerable attention from both researchers and policymakers, less attention has been paid to urban freight transport (Browne et al., 2012; Gatta et al., 2017). For example, Rodrigue (2006) argues that transport geographers have neglected freight in the urban context, even though local pollution (NOx, PM, noise, and dust), traffic safety, congestion, parking, and lack of space for deliveries pose challenges freight transport. In Norway, freight transport accounts for 30% of the total transport in urban areas (Ministry of Transport and Communication, 2017), and is likely to increase due to e-commerce and increased numbers of deliveries direct to homes (Cardenas et al., 2017; Visser et al., 2014).

Although freight transport has gained increased attention among urban planners in large cities (Cui et al., 2015), interest in city logistics solutions is currently at a low level in most local authorities (Van Duin and Quak, 2007). This calls for improved understanding of the link between urban freight and cities (Cui et al., 2015), which in turn implies there is a need for providing more efficient and higher quality services, reducing traffic congestion, and increased levels of local governance (Ambrosino et al., 2015). Hence, cities need to address freight transport in their decision-making processes. Local authorities have fragmented knowledge of stakeholders in urban freight and of potential measures for making urban freight green and efficient (Bjerkan et al., 2014; Lindholm, 2013). Towards this need, a number of European cities have started to develop Sustainable Urban Logistics Plans (SULPs) to facilitate urban logistics (Ambrosino et al., 2015). The SULP framework, which covers freight strategies, action plans, or elements in mobility plans, can be used to identify the current situation and define the strategic context, vision, targets, and objectives with respect to planning. SULPs may be an appropriate tool for local authorities to involve and interact with stakeholders in order to improve conditions for local freight delivery. This potential is in line with stakeholder consultation and collaboration as a key element in urban

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freight planning (Cui et al., 2015; Lindenau and Böhler-Baedeker, 2014; Stathopoulos et al., 2012). However, there has been limited previous research on stakeholder roles, particularly concerning the authorities' role in urban freight planning (Ballantyne et al., 2013; Lindholm, 2012; Sund et al., 2016).

The EU's working document titled *A Call to Action on Urban Logistics* (European Commission, 2013a) highlights three main challenges in urban logistics: (1) lack of focus and strategy, and only a few cities with someone in authority responsible for urban logistics; (2) lack of coordination among actors in the logistics supply chain and in many situations insufficient dialogue between city authorities and private actors who operate in the urban context; and (3) lack of data and information about urban logistics, which makes it difficult to improve operational efficiency and long-term planning. A more systematic and comprehensive approach is needed at the city level to improve urban logistics planning and to address the above-mentioned challenges. This includes mapping the needs of relevant stakeholders so that they can be addressed when urban logistic plans are developed.

The aim of this paper is to understand the potential for coordinated logistics planning at the local level, which in turn implies answering the following research questions:

1. What are stakeholders' expectations towards coordinated logistics planning?
2. What are stakeholders' perspectives on participation in coordinated logistics planning?

In this paper, the term ‘planning’ refers to public planning, and the two questions are addressed through the results of interviews with relevant stakeholders in three selected cities in Norway: Bodø, Trondheim, and Drammen. These cities have different characteristics including local priorities, size, needs and impacts of freight mobility. The paper starts with a description of the complexity of urban freight including the supply chain. In urban areas with several stakeholders' spaces have multiple uses and often conflicting interests for their use. Thereafter, we describe the methodology and data, followed by our results and discussion. Lastly, we present our conclusions, as well as some recommendations and suggestions for further research.

2. The complexity of urban freight

Freight distribution is one of the principal users of urban space and is a central element in the complexity of mobility and accessibility planning. In recent decades there has been a tremendous change in freight distribution and logistics, which in turn has affected urban and suburban areas. The shift to containers that carry goods over long distances, globalisation of production, just-in-time production, and intermodality have all had considerable implications for transport demand (Cidell, 2011; Hesse and Rodrigue, 2004). Additionally, we have observed the fragmentation and dispersal of freight flows due to e-commerce, smaller shops, and an increased logistics sprawl whereby terminals have been located farther away from city centres and there have been increases in the numbers of last mile deliveries (Allen and Browne, 2010; Cherrett et al., 2012; Morfoulaki et al., 2016). Urban development and land use are being transformed by new supply chain organisations, logistics network designs, and consumer-based economies through modern logistics (Goodchild and Ivanov, 2018; Goodchild et al., 2018; Hesse, 2016). Suburban areas are attractive for freight activity, specifically warehousing because of the availability of ‘low cost land’ and transportation infrastructures that connect to more complex systems of regional and national flows (Dablanc et al., 2014; Dablanc and Rakotonarivo, 2010; Rodrigue et al., 2016).

Understanding the implications of the above-described trends is crucial both for developing liveable cities and for facilitating urban planning and land use (United Nations, 2018). Local municipalities have begun to adopt a number of strategies for improved mobility and urban development, such as increased passenger transport with soft modes, car-free spaces, car sharing and reduced car ownership, the use of renewable fuels, and facilitation of city logistics systems (City of Oslo, 2015; Ministry of Transport and Communication, 2017). However, concepts focused on the reduction of both motorized vehicles and space for them within the urban landscape can be problematic with respect to urban freight deliveries, as there are currently few realistic alternatives to the use of vans or trucks. In addition, stakeholders within urban supply chains seek to optimise their own value chains and are less focused on solutions that would be beneficial for the local community as a whole (Bjerkan et al., 2014; Cui et al., 2015; Kin et al., 2017; Nordtømme et al., 2015). A recent Norwegian study reported few or no discussions of freight deliveries during the planning, design, and construction of a large building, lack of coordination among the city authorities and with the private stakeholders, and lack of knowledge about the impacts for urban freight (Pitera et al., 2017). From these observations, it is apparent that the process of developing and implementing sustainable urban logistics in city planning is needed yet demanding.

The application of Sustainable Urban Mobility Plans (SUMPs) (European Commission, 2013b), can be seen as an attempt to address some of the above-described issues. A SUMP is defined as a strategic plan aimed at mobility in cities and their surroundings (Ambrosino et al., 2015). The development and implementation of a SUMP requires an integrated approach that combines cooperation, coordination, and consultation between different levels of authorities. Following the principle of public involvement from the beginning of the planning process, it is necessary for authorities to open up the topic for debate and to prepare for public participation as part of the planning process (Lindenau and Böhler-Baedeker, 2014). To ensure higher levels of user acceptance of plans, public authorities need to follow a transparent approach that involves relevant actors in both the development and implementation of their plans (Morfoulaki et al., 2015). Van Duin and Quak (2007) argue for a focus on a cooperative approach, including both government and private parties.

Practitioners' involvement is of key importance for initiating actions to improve the current situation (Cui et al., 2015; Lindenau and Böhler-Baedeker, 2014). Through attempts at creating a framework and methodology for identifying key actors, and in recognition of the needs and logistics processes for individual cities, such as the Enclose Project (Ambrosino et al., 2015), Fossheim and Andersen (2017) conclude that local authorities should develop Sustainable Urban Logistics Plans (SULPs) for integration into cities' SUMPs. In Norway, there is growing interest in developing SULPs, and a number of industry representatives have described an urgent need to implement urban logistics plans (Spurkeland and Andersen, 2014) to understand why freight is important to the city and the region, examine the challenges of moving freight and to develop solutions to address challenges.

3. Stakeholders in urban freight

The most relevant stakeholders involved in urban freight are classified as *authorities*, *carriers*, and *receivers* (Lindholm, 2012, 2013), as shown in Fig. 1. *Authorities* are responsible for transport infrastructure systems, law and enforcement, and governing policies at three levels: local, regional, and national. In this paper, the term ‘local authorities’ refers to city-level administration and to a large extent defines the spaces in which public and private actors can act (Stathopoulos et al., 2011). In Norway, local authorities have a number of concerns, including making the city attractive for residents, visitors, and businesses, and minimising the negative effects of transport, while simultaneously trying to strike a balance between private and public objectives (Bjerkan et al., 2014; Browne et al., 2012; Stathopoulos et al., 2012).

Carriers have been identified traditionally as private stakeholders in logistics (Ogden, 1992). Carriers are responsible for transport from the distribution terminals and aim to collect and deliver goods as efficiently

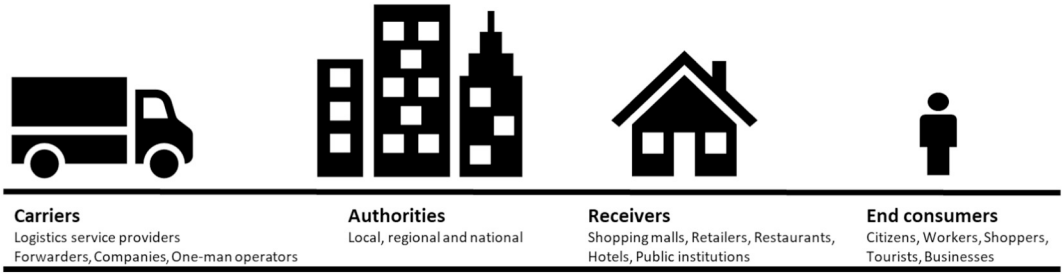

Fig. 1. Stakeholders in urban freight, with examples.

as possible by optimising load capacity, co-loading, and delivery routes (Stathopoulos et al., 2012). *Receivers* are the final link in the supply chain, and their main task is related to commissioning and receiving deliveries. Receivers form a complex group that responds to the demands of end consumers (Bjerkan et al., 2014; Stathopoulos et al., 2012).

Public stakeholders play a key role in logistical performance and by minimising the environmental impacts of freight transport. A key barrier to coordinated urban logistics planning is that different actors within local authorities vary in their degree of awareness of their potential influence. This is due to their fragmented responsibilities and unclear roles in urban freight (Ballantyne et al., 2013; Lindholm, 2012). Different departments within city-level administration, such as agencies for planning and building, the police, parking agencies, labour inspection authorities, and food safety authorities, often represent conflicting goals and motivations, (Hull, 2008). Attitudes among local authorities often reflect the perception that optimisation of urban distribution is a private concern (Lindholm, 2012; Lindholm and Behrends, 2012). However, public stakeholders have considerable potential to influence when and how freight is distributed in urban contexts through, for example, initiating a SULP process.

Private stakeholders in urban logistics are a highly diverse group. For example, carriers include small, independent transport companies or one-man transport operators who collect and distribute goods either for their own organisation or for bigger companies, as well as freight forwarders that collect goods for larger deliveries prior to distribution (Cherrett et al., 2012; Hesse, 2016; Kim et al., 2018). Due to the importance of supply chain integration and increased outsourcing of logistics to third parties, logistics service providers (LSPs) form a growing group of private stakeholders in addition to the carriers (Fabbe-Costes et al., 2008). In the literature, there is a strong focus on how carriers and LSPs can increase economic profits, wherein the main issues typically addressed are load capacity, co-loading by planning pick-up and delivery, and vehicle routing (Bjerkan et al., 2014; Goodchild and Ivanov, 2018; Stathopoulos et al., 2012).

Receivers can operate as small independent firms or form part of a large retailer chain. In city centres, the receivers may be stores located in streets or shopping malls, retailers, restaurants, hotels, or public institutions (Bjerkan et al., 2014). The variation suggests that different receivers can influence and be influenced differently by policy measures concerning urban distribution (Ballantyne et al., 2013). In addition, a number of actors are directly influenced by urban freight transport, although their involvement is always indirect (Bjerkan et al., 2014; Cui et al., 2015). Citizens, workers, shoppers, tourists, vehicle manufacturers, and property owners, to name a few (Russo and Comi, 2010). Traditionally, such stakeholders have not participated in transportation planning but their interests should be considered by the public authorities within mobility planning processes, even though their roles and responsibilities are not clearly understood (Kin et al., 2017; Lindenau and Böhler-Baedeker, 2014; Österle et al., 2015).

4. The Norwegian context

Norway as a whole has maintained steady economic growth since the 1970s and the per capita income in the country is among the highest in the world (Statistics Norway, 2018). In addition, the rise of a neoliberal and pro-business ideology (Sager, 2011) has emphasised deregulation and encouraged private investment within urban development. Norway is characterised by a rather dispersed population and low-density urban areas, but the Government has shown a clear commitment to sustainable development through its multilateral agendas. The ongoing demographic trends in Norway are partly marked by immigration, the concentration of population in larger cities, reduced household size, and an increasing elderly population (Ministry of Climate and Environment, 2018).

The Norwegian context on local level is similar in many respects to that of a number of other European countries, with a community structure dominated by small to medium-sized cities and urban agglomerations. However, it has some distinctive characteristics with respect to the organisation of urban freight, with small independent carriers operating for larger freight forwarders and logistics companies. Public authorities are relatively strong at the local level, and to a large extent they are responsible for city and mobility planning, and thus responsible for facilitating urban freight transport.

National and regional planning only serves to influence local municipal planning processes (Ministry of Local Government and Modernisation, 2012) by providing general guidelines and frameworks for the transportation of goods and for infrastructure systems in cities. The Planning and Building Act is among local authorities instrument to safeguard public interests, manage land use policy, and instruct the local authorities in the development of both a municipal master plan with a 16-year horizon and an updated action programme every four years (Ministry of Local Government and Modernisation, 2008). For example, the Norwegian Public Road Administration (NPRA) has links to local municipalities and city administrations through its responsibility for public roads. The NPRA and other governmental bodies have developed handbooks and guidelines to support local planners and developers (Norwegian Public Roads Administration, 2014). However, the guidelines do not directly address the use of urban spaces where the handling of freight has an impact on other street users or where delivery issues arise (Pitera et al., 2017).

Commitment to the principles of sustainability has forced local planning authorities to adopt different tools to reduce urban expansion and logistics sprawl, and to facilitate public transport, cycling, and walking. The National Transport Plan which sets forth the Norwegian Government's transport goals and strategies in a long-term perspective, has motivated local authorities in major cities to develop local transport plans, but mainly focus on passengers. (Ministry of Transport and Communication, 2017). The largest cities in Norway receive national funding through city agreements with the national government, which are intended to stabilise or reduce private car vehicle miles travelled. The agreements finance infrastructure for bicycles, pedestrians, and public transport, and discourage the use of private cars through regulations and fiscal tools (Ministry of Climate and Environment, 2018;

Ministry of Transport and Communication, 2017). However, these agreements do not seem to encourage integrated mobility planning that incorporates goods and passengers alike, which is a prerequisite for developing attractive and sustainable cities (Banister, 2008; Rai et al., 2017; Russo and Comi, 2016).

5. Methodology

The aim of this paper is to provide an understanding of the potential for coordinated logistics planning at the local level, by gaining insights in the stakeholder's expectations and their perspectives on participation in urban logistics planning. In order to get this insight, interviews were conducted with stakeholders from three distinct Norwegian cities: Bodø, Trondheim, and Drammen. The three cities are among a total of nine cities currently participating in an ongoing national research project – Norsulp[1] – on facilitating strategies for mobility and urban development through developing guidance for the establishment of urban logistics plans in Norway. Since less consideration has been given to freight in the urban context to date, including in Norway, these cities represent the first stage of a process of integrating logistics and stakeholder participation in urban planning. The data were derived from semi-structured interviews with representatives from the three stakeholder groups described in Section 3 (see Table 1 for an overview).

Semi-structured interviews are considered suitable for gathering experiences and information about a topic for which there is limited knowledge (Thagaard, 2009). They are also appropriate because they allow for the capture of individual stakeholder's subjective reflections (Tjora, 2012). In the studied cities, semi-structured interviews also enabled individual stakeholder's expectations towards coordinated urban logistics to be recorded. All interviews were based on an interview guide that focused on stakeholders' expectations regarding their contributions to an urban logistics planning process. The guide had two main purposes: (1) to identify existing goals and policies concerning urban freight, and (2) to reveal attitudes concerning the development of logistics plans. Initial contact with the interviewees was established through the Norsulp project. The interviewees were sampled from the stakeholder groups and were actively recruited to include those with different backgrounds in the public and private sectors. Since the public stakeholder groups had different responsibilities, interviewees from all three public authority levels were included (i.e. local, regional, and national).

A total of 20 individual interviews were conducted during spring 2016, including more or less equal numbers of stakeholders from the three cities. Each interview lasted no longer than 1 h. In addition to the interviewees' responses, additional materials such as plans, and project proposals were collected and analysed. Of the 20 interviews, 13 represented public authorities, of which 10 were at the local level, mainly from the city planning departments and the climate and energy departments. In addition, representatives from parking, operation, and maintenance were interviewed. Three interviews were conducted with representatives from national and regional authorities, all of whom were employed at different levels in the NPRA. The interviewees from the public sector represented a large variety of interests and responsibilities, but they all worked with topics related to city development and urban transport. The private stakeholder group was subdivided into carriers and receivers. The representatives in the carrier's group were from one company in each city (two freight forwarders and a one-man transport operator) and from an interest organisation representing hauliers (Norwegian Hauliers' Association). The representatives of receivers were from a shoe store, a restaurant, and a discount store, one in each of the three cities. All interviews were made anonymous. Summaries of the interviews were categorised by stakeholder group and used to interpret the interviewees' statements. The selected cities, seen in Table 2, represent different levels of engagement in urban transport through their respective city programme and face different challenges in terms of city development. Relevant initiatives in the three cities mainly focus on passenger transport and city development, and do not include any specific freight topics.

Table 1
Interviews classified by stakeholder groups.

Stakeholder groups		Interviewees	
Public *(n = 13)*	Authorities	Local level	10
		National and/or regional level	3
Private *(n = 7)*	Carriers	–	4
	Receivers	–	3
Total			20

Smart City Bodø was recently established to develop a new city area following relocation of the city's airport Bodø Kommune, 2016). Also, the newly established Living City Drammen focuses on 'city growth with quality' towards the city's 225 years jubilee in 2036 (Drammen Kommune, 2018). Greener Trondheim, which has been ongoing since 2008, is a partnership that engages public stakeholders with a focus on passenger transport and comprises a city agreement with the national government. Trondheim is investing NOK 15 billion in roads and facilities for pedestrian, cyclists, and public transport in the period 2010–2025, with the aim of reducing greenhouse gas emissions, congestion, traffic noise, and the number of traffic accidents by ensuring better traffic management and increasing the share of transport on foot or by bicycle, bus, or tram (Lee and Berthelsen, 2016; Trondheim Kommune, 2017).

6. Results and discussion

The interviews were used to understand the potential for coordinated logistics planning at the local level by investigating the stakeholder's expectations and their perspectives on participation in such planning.

6.1. Stakeholders' expectations

6.1.1. Public stakeholders

6.1.1.1. Strategy and policy plans. Interviewees from the local authorities were generally in agreement in their perceptions that urban freight lacked a unified strategy within the city administration. During the interviews, the topic of urban logistics plans generated enthusiastic responses among the interviewees, but they also reported that they had experienced urban freight as a challenging issue in the absence of an evident, coordinated strategy. Responsible bodies involved with urban freight occasionally had conflicting goals, which in turn caused problems in administration, regulation, and enforcement. This finding was not surprising, because urban freight policies include many domains and means that relevant city administration personnel can be found at several levels or in a number of departments. The interviews revealed that local authorities had implemented a number of strategies and actions that prioritised passenger transport, road safety, and street use. The strategies did not include urban freight deliveries. The lack of strategies for urban freight, along with a fragmented organisational structure made it difficult to coordinate issues on urban freight within and between the different departments.

A further indication of the complexity in urban freight planning was reflected in different interviewees' references to a variety of key policy documents or instruments for urban freight at the local level. Some interviewees mentioned the municipal master plan anchored in the Planning and Building Act (Ministry of Local Government and Modernisation, 2008) while others emphasised city development plans, which are more informal in character. The interviewees also

[1] www.norsulp.no

Table 2
Characteristics of the selected cities.

City[a]	2017			Estimated population growth 2017–2040 (%)	Relevant city programme
	Number of residents	Area of urban settlements (km^2)	Density (residents/km^2)		
Bodø	40,705	14.12	2883	17	Smart City Bodø
Drammen	116,446	51.23	2273	19	Living City Drammen
Trondheim	180,557	57.32	3150	14	Greener Trondheim

[a] https://www.ssb.no/en/statbank/table/04859/tableViewLayout1/?rxid=3be78431-53a7-435a-9b40-01d97603f9c8

emphasised various thematic plans that they regarded as relevant for urban freight, as well as experiences that illustrated the complexity in the hierarchy of plans at city level. Given that freight planning responsibilities are divided across various departments within the local authorities, individuals within administration often lack an overview of the entire landscape of regulation and enforcement at city level and the different actors' scope for action.

6.1.1.2. Attention to urban freight in public planning. The interviewees stated that urban delivery situations were in general treated on a case-to-case basis in public planning, which meant that there was not much continuity or uniformity between different cities. Issues were not necessarily given thorough, holistic consideration, thus making it difficult for comprehensive solutions to be found. Actors with particular agendas can influence different stages of the planning process, resulting in suboptimal solutions for other actors who are directly influenced. One example is the construction of loading zones and goods reception. The city administrations have central responsibility for localising loading zones, but the agreed solutions are not necessarily easy to find when there are many conflicting interests within an urban area. One respondent stated that it was difficult to administer building applications because the economic interests were usually a main concern for the developer and property owner, and a loading zone inside the building did not generate money. Hence, the developer preferred freight deliveries to be made in a loading zone outside the building instead, which in turn could conflict with activities on the streets and pavements, such as cycling and walking. However, the interviewees rarely considered the impact of freight in their daily planning activities. This was mainly due to their lack of knowledge and experience about urban freight, but also the lack of involvement of private stakeholders, in, for example, the development and implementation of delivery solutions.

6.1.1.3. Connections between local and regional levels and the national level. The interviews with the representatives of regional and national authorities revealed they were mainly concerned about national plans and regulations such as the National Transport Plan or Vision Zero in road safety,[2] as well as requirements necessary to implement various EU directives. The national regulations generate framework conditions and indirectly influence the performance of urban freight, but do not necessarily provide guidance on how urban freight should be managed in practice. The interviewees highlighted that national and regional authorities functioned as consultative bodies that involved regional and county roads, while the local authorities' focus was on urban transport. The overlap between strategies and planning at regional and national levels is limited and regional authorities do not have jurisdiction over local urban freight issues, nor do they have a general interest in them. However, according to the representatives of supply chains and terminals located outside the city centres, there was a need to improve the link between local and regional planning with respect to integrating land use and transportation.

[2] Vision Zero in road safety is a multinational project with the goal that no one shall be killed or seriously injured while using the road transport system.

6.1.1.4. Ownership and coordination. The interviews revealed that the public authorities are particularly enthusiastic about developing logistics plans that increase the expertise and diversity of knowledge within the city administrations and improve coordination between different departments involved in questions concerning urban freight. Interviewees who represented authorities were particularly in agreement that the planning process should have strong internal support at the local authority level and should be strongly anchored politically. This finding is in accordance with the SULP guidelines, which state that all relevant departments within city administration should be included in the process (Ambrosino et al., 2015). The included departments are likely to vary between cities, because the organisation of urban freight issues varies considerably between cities. Thus, fostering ownership of the process is critical, since many different departments are involved, which means that local authorities can easily fail to pay attention to competing issues. The representatives of public authorities expressed optimism that an urban logistics planning process could result in better coordination between departments and lead to a platform of knowledge and better practices for urban freight deliveries.

6.1.2. Private stakeholders

6.1.2.1. Early involvement. All of the private stakeholders considered that being involved in the planning process at an early stage was very important. A number of interviewees pointed out that single measures that had been implemented by public authorities, often as a result of demands related to environmental concerns, can have adverse effect on urban freight. In many cases private stakeholders should have been consulted on such policy measures. For example, carriers might have faced large economic costs when new requirements were introduced concerning the technical performance of trucks. The predictability of policies and regulations is critical for this stakeholder group, so that investments in operations can be adjusted according to political decisions. The representatives of the carriers were aware that they would need to adhere to any implemented political measures.

From the interviews, it could be deduced that private stakeholders' main interest is in reducing their own expenses. Inefficient operations are costly and private stakeholders therefore focus mainly on economic and efficiency issues. Typically, when considering changes to operations, carriers test potential delivery solutions on a small scale but without coordinating with other actor groups. Carriers and receivers are aware that their interests may compete with the interests of other stakeholders and sometimes compete with the interests of others within the same stakeholder group. Such conflicts of interest may complicate planning processes. If given an opportunity, carriers and receivers are often eager to work with city authorities on concrete plans to identify problems at an early stage and to work co-operatively to implement solutions, as this enables them to see the direct benefits of their involvement. If an urban logistics plan addresses the needs of private stakeholders, the active development of such a plan may lead to increased private stakeholder involvement in the public planning process.

6.1.2.2. Best practice in practical solutions. Drivers face numerous practical challenges when making deliveries, such as uneven surfaces and insufficient space for manoeuvring, loading, and unloading goods. The interviewees mentioned shopping malls were an increasing concern

for drivers, particularly when the lack of a common loading zone meant that drivers had to wait in a queue to deliver goods directly to individual stores. The representatives of carriers were particularly hopeful that being involved in public planning processes could lead to better practical solutions at street level for the drivers. Additionally, increased transparency among the stakeholders is important to gain trust for cooperation in the last mile logistics.

The results of the interviews indicated that the receivers were generally less concerned about measures related to urban freight than were the carriers. The receivers did not appear to care about urban freight as long as goods arrived at the agreed time and were not exposed to the challenges that both the carriers and other impacted stakeholders experienced. Additionally, they were of the opinion that what happened on the streets was outside the scope of their responsibility, but rather a public responsibility. However, some individual strategies, such as increased focus on local commodities and the use of electric vehicles, were mentioned by both carriers and receivers as relevant for future urban freight solutions.

6.2. Stakeholders' perspectives on participation

The process of establishing an urban logistics plan should help local authorities in Norway to facilitate dialogue and find solutions in coordination with public and private stakeholders in order to overcome any challenges and barriers to urban logistics planning. Based on the analysis of the 20 interviews in the Norwegian context, important aspects of preparations for an urban logistics planning process should include identifying: (1) which stakeholders to involve, (2) the complexity and challenges regarding urban freight, (3) the consequences of suboptimal outcomes for all stakeholders, and (4) the connection between the supply chain and last mile deliveries.

The main reasons why the interviewed stakeholders wanted to participate in a logistics planning process at the local level are listed in Table 3. Overall, private stakeholders were positive towards participating in an urban logistics planning process, but they were more reserved in their expectations than were the representatives of the public authorities. Private stakeholders found the planning process time-consuming. In addition, they experienced delivery solutions as inefficient and unpredictable, often because the implemented solutions were based on consensus among local authorities alone and were not in harmony with the wishes of private stakeholders. To facilitate the connection between the supply chain and the last mile, it is necessary to include the regional perspective in logistics planning, yet the interviewees indicated that focusing too much on a regional perspective in urban freight plans seemed to shift the emphasis from urban issues to heavy goods vehicles and long-haul transport.

7. Conclusions

7.1. The potential for coordinated logistics planning

The purpose of our study was to understand the potential for coordinated logistics planning at the local level in Norway. Based on the findings, we conclude that there is *no coordinated planning* and few dedicated resources for urban freight at the local level. Urban logistics is not properly integrated into urban transport and economic development strategies, and freight plans rarely exist at the city level. Despite the key role of urban freight in the local economy, none of the cities have a clearly identified official responsible for freight. However, the research revealed both an expected benefit of the development of urban logistics plans as well as enthusiasm for such plans. The majority of the urban logistics operations are carried out for and by private actors, who operate regularly but without a dialogue with city authorities. In the absence of cooperation among the public and private stakeholders, it is not possible to implement long-term solutions for urban logistics problems, which are likely to increase as cities grow and become increasingly dense. In addition, the trend in e-commerce and home deliveries has a large impact on both the transport system and the balance between individual travel and urban logistics (Visser et al., 2014). These findings support earlier claims that urban freight transport should be given higher priority on the local agenda (Ballantyne et al., 2013; Cui et al., 2015).

The results of the studies provide insights into how cities are currently dealing with the lack of focus and strategy in urban logistics, as well as the lack of coordination among actors in the supply chain and among public and private stakeholders in urban freight. For example, they show that the cities lack sufficient resources to tackle the challenges in urban freight. The described processes, which were part of the research strategy to organise workshops for all concerned actors, are by itself already a benchmark for the kind of participation settings to put in place. To our knowledge, this paper is one of the first attempts to analyse such practices in cities. Furthermore, the results contribute knowledge about how to involve the stakeholder in urban logistics planning. As was explained in Sections 2 and 3, we proposed to follow a structured way to identify and invite the stakeholders to be included. This approach was very much appreciated by the participants.

A national approach to enabling uniform local approaches could develop *guidelines* with an overall vision for urban freight and guide the local authorities to initiate collaboration with relevant stakeholders (Fossheim and Andersen, 2017). When local planning processes are derived from national guidelines the possibilities for *knowledge sharing* among cities increase. However, it is equally important to map stakeholders' expectations in each city, as a step to establish a collaborative urban logistics planning process in which stakeholders are consulted (Ballantyne et al., 2013). It is evident that cities need to adjust the process and measures to the local context, which in turn requires a clear understanding of a city or region's needs. Local authorities should jointly work with stakeholders on city region strategies for policy integration in order to transfer knowledge across a wider region to reduce complexity, and to achieve transport solutions that are more sustainable in cities than at present (Fossheim and Andersen, 2017; Hull, 2008).

Based on the findings, we conclude that there is both a need and a potential for the development of logistics plans in Norwegian cities, since all of the interviewees had a *positive attitude* towards being involved in and contributing to coordinated logistics planning. The study indicated that urban logistics planning may increase the level of attention paid to freight transport at the local level. Additionally, they

Table 3
Reasons for stakeholders wishes to participate in logistics planning at the local level.

Public stakeholders	Private stakeholders
• Opportunity to take ownership of the process	• Gain knowledge of the planning process
• Increased expertise and knowledge	• Early involvement and given input
• Better coordination within local authorities	• Require cooperation in the supply chain and the last mile
• Belief that guidelines will facilitate predictability and transparency among cities	• Expectations of less stakeholder conflict
• Develop best practice and practical solutions	• Expectations of higher predictability
• Transfer of knowledge between cities	• Private stakeholder involvement may facilitate decision-making support and suitable solutions
• Integration of logistics into mobility plans	

hoped for the formation of an arena in which dialogue and meetings would be held in order to help the involved stakeholders to be aware of reciprocal and common user needs regarding urban freight.

7.2. Recommendations

It is in the common interest of local authorities and businesses to optimise city logistics, yet far too often they operate in isolation, without the necessary cooperation and agreement. Through bringing together the local actors as part of a collaborative planning process, meaningful plans for action can be developed. In turn, that would help to establish a generic decision-making framework, anchored in the cities' planning systems, which would facilitate meaningful interactions between the various stakeholders. To be effective, the vision needs to be integrated with other urban policies, clearly articulated, and shared by all stakeholders, in addition to be tailored to the individual cities' local context (Civitas, 2015; Macário and Marques, 2008). In urban and regional planning, it is the local levels ideas and processes that may be most meaningfully expressed and operationalised due to a potential appeal to unaccustomed decision-makers. Because matters of significance are neither too trivial to be of interest, nor too remote to be outside their orbit of influence (Fagence, 1977). Nevertheless, due to the integration of both land use and transportation planning and the link between city logistics and the supply chain through terminals, it is important to incorporate urban freight transport and connect the planning process to regional level. Regional transport strategies and plans may contribute to develop a hierarchy of approaches to reduce impacts of freight (Cui et al., 2015; Fossheim and Andersen, 2017; Hull, 2008).

By increasing coordination and competence among the public authorities at various levels and by developing national guidelines, it is likely that predictability in day-to-day operations would be improved for all actors through increased transparency concerning how urban freight deliveries are handled within city administrations. Increased knowledge is required to understand the complexity of urban freight, how laws and regulations affect present systems, and to understand some of the trade-offs and conflicts between users of shared urban spaces. Furthermore, an understanding of the planning hierarchy is needed to involve the private stakeholders at appropriate early stages in the planning process and to improve coordination between public and private stakeholders (Österle et al., 2015). Local authorities currently focus their attention and resources on passenger transport, leaving few dedicated resources for freight. The important role played by logistics in the city economy can illustrate the large potential for working with logistics stakeholders to improve urban freight efficiency, to reduce costs, and to eliminate other negative impacts.

7.3. Further research

There is a lack of predictability in the supply chain and suboptimal solutions are found daily among the private stakeholders. The private stakeholders are to a large degree uncoordinated and their operations are characterised by ad hoc solutions. Therefore, the stakeholders themselves call for involvement in the public planning process. All these differences result in the need for a general, centralized guidelines that can be adapted for local condition. Not only fixed meetings but also arenas with possibilities to invite new businesses as start-ups and new players.

Once relevant stakeholders have been identified, the next step would be to involve and engage them in an improved collaborative process towards an urban logistics plan (Bjørgen et al., 2018). Further research should therefore pay attention to private stakeholders' operational needs in order to ensure that their participation in the planning process would be considered worth their time. Additionally, a more thorough mapping of small and medium-sized enterprises (SMEs) should be considered in order to involve SMEs and gain knowledge about their current situation and their future needs for participation in urban logistics planning processes. Moreover, it is important for local authorities to be specific about both how collaboration should occur and how to ensure that private stakeholders are engaged from the outset of the process. The research findings presented in this paper give some indications to how to engage stakeholders, but more knowledge is needed. Possible arenas for the involvement of the stakeholders in planning could be collaborative events, such as workshops for gathering knowledge in dedicated cities (Innes and Booher, 2010; Innes and Booher, 2015; Raynor et al., 2018). Furthermore, local information can be compiled and used to develop the national guidelines to deal with the complexity of urban freight, and at the same time give input to each city's challenges and possibilities with respect to logistics planning.

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